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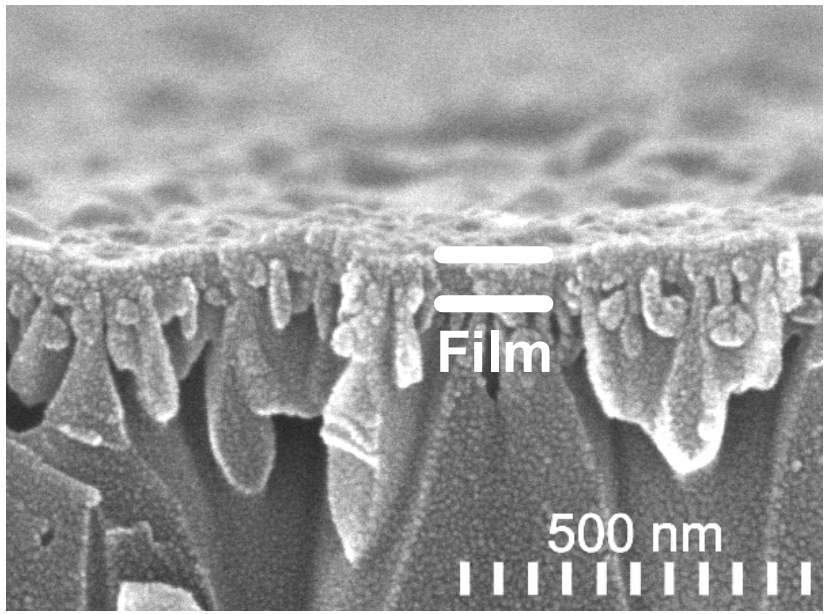
In pervaporation, a liquid is exposed to the surface of a membrane, and selective transport of one component through the membrane to a vapor phase allows for solvent purification or collection of solute. This process can effect low-energy separations that are often not possible with conventional distillation.

Professor Merlin Bruening and graduate student Daniel Sullivan developed a method for forming pervaporation membranes containing ultrathin (50 nm) polyimide skins on porous supports. This membrane geometry yields remarkably high flux and water/isopropanol selectivities as high as 6000. Such a membrane is attractive for dehydrating solvents.



The image shows an ultrathin polyimide film on a porous alumina support.